ABSTRACT OF THE DISCLOSURE

In a piezoelectric resonator, the temperature coefficient ε_{TC} of the capacitance of the piezoelectric material, the bandwidth ratio $\Delta f/fo$, the temperature coefficient Fr_{TC} of the resonance frequency, the temperature coefficient Fa_{TC} of the anti-resonance frequency, and a target value α for the temperature coefficient of the center frequency satisfy the following expression:

$$|(Fr_{TC} + Fa_{TC})/2 + K \times \varepsilon_{TC} \times (\Delta f/fo)| \leq \alpha$$

where K = a coefficient determined according to the impedance at the midpoint between Fr and Fa; $\varepsilon_{TC} = A \times$ (the amount of change in capacitance in a measured temperature range) / (the capacitance at a reference temperature $\times$ the measured temperature range); $\Delta f/fo$ = (Fa at the reference temperature - Fr at the reference temperature) / (fo at the reference temperature); $Fr_{TC} = A \times$ (the amount of change in Fr in the measured temperature range) / (Fr at the reference temperature $\times$ the measured temperature range); $Fa_{TC} = A \times$ (the amount of change in Fa in the measured temperature range) / (Fa at the reference temperature $\times$ the measured temperature range); and A = a coefficient of +1 for a positive temperature coefficient and -1 for a negative temperature coefficient.